

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GARY A. SECOR, RAYMOND J. TAYLOR,
DENNIS L. BIDNEY and CHERYL L. RUBY

Appeal No. 94-1709
Application 07/716,115¹

ON BRIEF

Before WINTERS and WILLIAM F. SMITH, Administrative Patent Judges, and McKELVEY, Senior Administrative Patent Judge..

WINTERS, Administrative Patent Judge.

DECISION ON APPEAL

This appeal was taken from the examiner's decision rejecting claims 1, 4, 5, 9, 12 through 14 and 18 through 20, which are all of the claims remaining in the application.

¹ Application for patent filed June 17, 1991.

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Claims 1 and 9, which are illustrative of the subject matter on appeal, read as follows:

1. A method for in vitro selection of blackspot resistant tubers from regenerated potato plants obtained from tissue culture, comprising the steps of:

(a) culturing tissue obtained from a potato plant in cell layer medium and associated reservoir medium;

(b) subculturing said tissue on callus proliferation medium to obtain callus formation;

(c) subculturing said callus on shoot induction medium to obtain shoot formation;

(d) subculturing said shoot on a rooting medium to ensure root formation, whereby potato plants are regenerated from which blackspot resistant tubers are produced; and

(e) adding at least one melanin precursor to at least one of said reservoir, callus proliferation, and rooting media, whereby said potato plants are regenerated from the calli and roots which show no blackening response when the melanin precursor is added.

9. Potato plants regenerated in accordance with the method of claim 1.

The references relied on by the examiner are:

Cherry et al. (Cherry)	4,937,085	June 26, 1990
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J. F. Shepard, "Mutant Selection and Plant Regeneration from Potato Mesophyll Protoplasts," Genetic Improvement of Crops Emergent Techniques 185-219 (I. Rubenstein et al. eds., University of Minn. Press 1980).

The issues presented for review are: (1) whether the examiner erred in rejecting claims 9 and 18 through 20 under

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35 U.S.C. § 101 as drawn to non-statutory subject matter; and
(2) whether the examiner erred in rejecting claims 1, 4, 5, 9,
12 through 14 and 18 through 20 under 35 U.S.C. § 103 as
unpatentable over the combined disclosures of Shepard and
Cherry.

35 U.S.C. § 101

Even though product-by-process claims are limited by and
defined by the process, determination of patentability is
based on the product itself. The patentability of a product
does not depend on its method of production. In re Thorpe,
777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985).
Mindful of that principle of law, we consider the
patentability of claims 9 and 18 through 20 under 35 U.S.C.
§ 101.

These claims define potato plants (cultivars) and tubers
having one salient characteristic, namely, resistance to
blackspot bruising. On this record, we find it reasonable to
conclude that the claims "read on" naturally occurring potato
cultivars and tubers resistant to blackspot. We refer to the
following passage at page 3, second paragraph, of appellants'

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specification in the section entitled BACKGROUND OF THE
INVENTION:

Even when all the predisposing factors are considered, potato cultivars vary markedly in their response to impact damage. Some cultivars may be highly resistant to blackspot while others may be highly susceptible. Tubers from a single plant may differ in their blackening responses. Susceptibility may also vary from the stem end to bud end of an individual tuber. [Emphasis added.]

We find no limitation in claims 9 and 18 through 20 serving to distinguish appellants' potato plants and tubers from products of nature (cultivars and tubers) which are "highly resistant to blackspot." Accordingly, we affirm the rejection of claims 9 and 18 through 20 under 35 U.S.C. § 101 as drawn to non-statutory subject matter.

In so holding, we have not overlooked the declaration of Gary A. Secor executed October 2, 1992. According to Dr. Secor,

[i]t is widely and universally known by potato researchers, breeders, etc., that the Lemhi Russet variety of potato is highly susceptible to blackspot
and

[i]t is also widely and universally known by people in this industry that if one were to sample naturally occurring Lemhi potatoes in an attempt to find one resistant to blackspot, the mathematical probability of finding such a potato would be

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virtually zero. On information and belief, despite repeated attempts to find such a blackspot resistant Lemhi potato since introduction of the variety in 1981, none has yet been found.

See the Secor Declaration, paragraphs 4 and 5. On this point, we invite attention to appellants' claims which are not restricted to the Lemhi Russet ("Lemhi") variety of potato. Where, as here, claims 9 and 18 through 20 contain no limitation serving to distinguish from naturally occurring cultivars "highly resistant to blackspot" (specification, page 3, second paragraph), we find it unnecessary to reach the question whether blackspot-resistant Lemhi plants and tubers occur in nature. The Secor Declaration, and appellants' argument based on that declaration, would predicate patentability on a limitation not found in the claims.

35 U.S.C. § 103

Considering now the prior art rejection, we find that a person having ordinary skill in the art would not have a sufficient basis for the necessary predictability of success to sustain a rejection under 35 U.S.C. § 103 based on the combined disclosures of Shepard and Cherry. See In re Clinton, 527 F.2d 1226, 1228, 188 USPQ 365, 367 (CCPA 1976).

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According to the examiner,

Shepard teaches that protoplasts can be subjected to suspected disease causing agents during development and subsequently resistant strains can be selected from the wild type by their lack of disease symptoms, i.e., their lack of susceptibility to the causative agent of the disease. [Examiner's Answer, paragraph bridging pages 3 and 4.]

Conspicuous by its absence from the Answer, however, is any reference to the particular portion or portions of Shepard which contain the above-quoted teaching. See 37 CFR § 1.106(b), stating that "the particular part [of the reference] relied on must be designated as nearly as practicable."

Furthermore, in our judgment, the examiner overstates the import of Shepard. This reference discusses "The Problem with Potatoes," and states that "[g]enetically, the potato is a complex and diverse group of tuber bearing species and subspecies belonging to the genus Solanum" (Shepard, page 188). Shepard further discloses that "[h]istorically, the potato has contrasted sharply with the cereals and many other important crop plants in its having been quite refractory to specific improvement through conventional breeding techniques;" that "the potato is commonly omitted from comprehensive treatises on resistance breeding;" and that

"susceptibility to disease is a primary limiting factor in potato production internationally" (Shepard, page 189). Shepard further states that "[w]hen attempting to 'engineer' a potato possessing specified characteristics, the plant breeder faces enormous problems only superficially addressed above" (Shepard, page 191). In a section entitled "Previous Potato Regeneration from Single Cells or Protoplasts," Shepard discloses that "[o]nly very recently have techniques emerged whereby plants may be regenerated from single cells of potato, whether of mesophyll protoplast or cultured cell origin" (Shepard, page 192). After describing in detail current methods used in the laboratory for protoplast isolation and regeneration, Shepard states as follows:

The foregoing discussion suggests that frequent examples of potentially valuable variation exist within potato plant populations raised from mesophyll protoplasts. Consequently, it is reasonable to expect that some variants could be selected early as either protoplasts or small calli and then be regenerated into plants possessing a predicted modification. At the present time, there are no published accounts of this for potatoes, but, from systems becoming available, ones should be forthcoming. [Shepard, page 211, emphasis added.]

Finally, in the section entitled "Conclusions," Shepard states that:

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In the preceding paragraphs, I have attempted to outline the status of the potato mesophyll protoplast/ plant regeneration experimental system as it pertains to the improvement of this significant crop plant. The results are preliminary, and it will require an additional 2 or more years before we can truly assess the horticultural worth of regenerated material. Biologically and genetically, however, certain misgivings about the utility of such systems appear satisfied. [Shepard, page 214, emphasis added.]

All in all, we believe that the examiner "stretches" the teaching of Shepard by stating as follows:

Shepard teaches that protoplasts can be subjected to suspected disease causing agents during development and subsequently resistant strains can be selected from the wild type by their lack of disease symptoms, i.e., their lack of susceptibility to the causative agent of the disease. [Examiner's Answer, paragraph bridging pages 3 and 4.]

Shepard is more circumspect than that. Shepard describes "prospects for protoplast and/or callus selection," but the results are preliminary in nature. According to Shepard, "[t]he results are preliminary, and it will require an additional 2 or more years before we can truly assess the horticultural worth of regenerated material" (Shepard, page 214). Although it is reasonable to expect that some variants could be selected early as either protoplasts or small calli and then be regenerated into plants possessing a predicted

modification, nevertheless, at the present time, there are no published accounts of this for potatoes (Shepard, page 211).

Obviousness under 35 U.S.C. § 103 requires a reasonable expectation of success. Based on the foregoing discussion, we conclude that (1) the examiner's reliance on Shepard is misplaced; and (2) the prior art does not provide a sufficient basis for the necessary predictability of success to here sustain a rejection under 35 U.S.C. § 103.²

Further, the examiner states that "Cherry et al. teach that tyrosine, a melanin precursor, is considered to be a cause of blackspot in potatoes" and "[t]yrosine is taught by Cherry to be the causative agent of blackspot." See the Examiner's Answer, page 4. Again, the examiner does not specify the particular portion or portions of Cherry which contain that teaching. Apparently, the examiner refers to the "Background of the Invention" section of Cherry, discussing

² We note in passing that the Shepard reference is cited at page 24, last paragraph, of appellants' specification. Another reference is cited in that same passage, namely, Taylor et al., "[a] shoot induction procedure altered for increased shoot efficiency of potato protoplast - derived calli, Potato Research 31:651-658 (1988)." However, in rejecting the appealed claims under 35 U.S.C. § 103, the examiner does not rely on Taylor et al.

the Muneta reference³ and a series of biochemical conversions implicated in the enzymatic blackening of potatoes. However, we believe that the examiner mischaracterizes the reference by stating: "Cherry et al. teach that tyrosine, a melanin precursor, is considered to be a cause of blackspot in potatoes" and "[t]yrosine is taught by Cherry to be the causative agent of blackspot." We do not find that teaching in Cherry. Nor does the examiner rely on Muneta in rejecting any of the appealed claims, although Muneta would appear to constitute closer prior art than Cherry respecting the enzymatic blackening of potatoes. Furthermore, we do not find that Cherry cures the deficiencies of the Shepard reference, discussed supra, or, in combination with Shepard, provides a sufficient basis for the necessary predictability of success to sustain a rejection under 35 U.S.C. § 103. For these reasons, we reverse the rejection of claims 1, 4, 5, 9, 12 through 14 and 18 through 20 under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Shepard and Cherry.

³ P. Muneta, "Comparisons of Inhibitors of Tyrosine Oxidation in the Enzymatic Blackening of Potatoes," Am. Pot. J. 58, 85 (1981).

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CONCLUSION

In conclusion, the examiner's decision rejecting claims 9 and 18 through 20 under 35 U.S.C. § 101 as drawn to non-statutory subject matter is affirmed. The examiner's decision, rejecting all of the appealed claims under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Shepard and Cherry, is reversed.

The examiner's decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

	SHERMAN D. WINTERS)	
	Administrative Patent Judge)	
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)	
	WILLIAM F. SMITH)	BOARD OF
PATENT	Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
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